

POPULATION GROWTH AND CHANGING LANDUSE PROFILE IN GIRNA RIVER BASIN IN NASHIK DISTRICT (MS)



Research paper—Geography

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Land is one of the most important resource which plays an eminent role in determining mans economic, social and cultural progress. Land use is the surface utilization of all developed and vacant lands on a specific space, at a given time. Lands are used for crops, forest, pasture, mining, transportation, garden and recreational, industrial and commercial and residential. Land use is also related to conservation of land from one major use to another general use. The use of land changes according to the changing needs of man. Stamp, L. D. (1948) has classified the needs of man into six major categories, viz., agriculture, home, food, transportation, communication, defense and recreation. Increasing population and changing needs of the time, requires revision of land utilization. The revision of land is done by trial and error method which leaves its trace of success and failure. The success of National planning is dependent upon the proper utilization of land. Some day in our country a planned programme will determine the pattern of land use and there not only crops and tamed animals but indirectly things will be determined by mans The demand of land changes du to changing needs of society conscious planning and use of land. and as socio-economic conditions change, land use keeps on changing.

The criticality of land in National development is cleared from a statement of the late Smt. Indira Gandhi in 1972 who said, " we can no longer afford to neglect our most important natural resources. This is not simply an environmental problem but one which is basic to the future of our country. The stark question before us is whether our soil will be productively enough to sustain the population of more than one billion, at higher standards of living than now-prevail.

We must have long term plants to meet this contingency." One basic fact that, cannot be ignored i.e. land is a finite resource and it is very essential that, land use is properly planned. We therefore, need a national policy on land (soil) with short and long range objectives. River Girna Basin is one of the most important river basin in Nashik district in Maharashtra and most prosperous in agriculture and land use aspect. In this paper an attempt has been made to highlight land use changes based on secondary data collected from District planning unit and Dy. Directorate of economic and statistics office, Nashik for the year 1990-91 and 2000-2001. Growing population is one of the main factors for changing land use scenario and is main threat to the land in the district. To overcome this problem, we must plan for the proper use of the available land resources and our living depends on successful agricultural self-sufficiency.

STUDY AREA: River Girna is the Major tributary of River Tapi. This is one of the most important river basin in Nashik district in Maharashtra and most prosperous in agriculture and land use aspect. Growing population is one of the main factors for changing land use scenario and is main threat to the land in the basin. Girna-Mosam Basin in Nashik district of Maharashtra having a total geographical area of 5829.43 square Km. It lies between 20^o 15' 43" to 20^o 53' 07" North latitude and 73^o 40' 12" to 74^o 56' 22" East longitudes. Physiographically, This region comprises of a part of a Deccan Plateau. This basin may be broadly divided in to four tahsils namely, Malegaon, Nandgaon, Satana, Kalwan and Deola. Deola is new tahsil from 26th June 1999. The soils of the Girna and Mosam valleys are quite deep and fertile.

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The soil in the rest of the region are undulating and susceptible to erosion. Light shallow soils are noticed on hill slopes. The climate of the study region is primarily Monsoonic, which is highly mild and healthy for establishment of human settlements and agriculture. This area receives 599.02 mm average annual rainfall (minimum 543.6 mm. annual rainfall in Satana tahsil and maximum 692.6 mm. annual rainfall in Malegaon tahsil) & most of it comes during the monsoon period from June to Sept. Similarly Malegaon experiences a very high temperature during the pre-monsoon period that is April and May (max. 44.06 °C & min. 35° C). As well as in rainy season it experience 30° C max. Temperature and 23° C. min. temperature. Agriculture is the chief support of the economy of the region and supports the population of 1631918 (2001 Census).

OBJECTIVES: The main objectives of the study are as follows: 1) To know the population growth and density from one decade to another. 2) To know the changing land use pattern and land use cover change scenario from one decade to another. 3) To know how demographic, economic and social factors play a vital role on changing land use pattern. 4) To know how land changing from one major use to another and the factors responsible for it. 5) To know the factors

responsible for increasing fallow land and land put to non-agricultural use. 6) To know the population pressure plays an important role for changing land use cover in the study area.

DATA BASE AND METHODOLOGY:

This study is based on secondary data and field work. The required statistical information is obtained from census handbook, the record of the local bodies, statistical department Government of Maharashtra as well as field survey. The delimitation of the Nashik district will attempted by marking out the watershed of river for which following Indian topographical maps published by Survey of India may be used.

POPULATION GROWTH:

Population is an important resource from economic point of view for the regional development of agriculture as it influences the economic activity and determines the level of consumption and agriculture force. The population in the Girna basin is 1635000 (2001 Census). It accounts for 37.54 percent of the Nashik district.

The average density of population in the study area 280 persons per square km. Table 1 show the population growth and density since 1961 to 2001 with a decadal variation and percentage of population growth.



Table 1: Population Growth and Density

Year	Population			Decade Variation	Growth in %	Density/Sq.Km.
	Rural	Urban	Total			
1961	499000	190000	689000	—	—	118
1971	610000	284000	894000	+205000	+29.75	153
1981	737000	349000	1086000	+192000	+21.48	186
1991	904000	465000	1369000	+283000	+26.06	235
2001	1050000	585000	1635000	+266000	+19.43	280

(Source: District census handbook and Author)

It is observed from table 1 that the population in Girna basin has been gradually increasing from 1961 to 2001. In 1961 the population in Girna basin was 689000 while it increased and attained 1635000 persons in 2001. The total increase in population during the above period is 946000 persons with higher rate. The population density value was here calculated as ratio of total population to the total area from 1961 to 2001 and is shown in table 1. It is revealed from this table that density of population in Girna Basin is increased since 1961 from 118 persons per sq. km. to 280 in 2001. The interesting fact regarding the density of population increased 2.4 times during study period. The decade from 1951 to 1961 the density exhibits low rate i.e. 118 persons per sq. km., while high rate of density was observed in decades 1991 to 2001 and it was 280 persons per sq. km. in the study area.

LAND USE IN GIRNA BASIN: Land use in the surface utilization of all developed and vacant lands on a specific space at a given time. Lands are used for forests, cultivation of crops, pasture, mining, roads and transportation, gardens and playgrounds, recreational, settlement (residential), industrial and commercial establishment etc. Whereas, uncultivable waste land, barren and fallow lands are unused lands. The present landuse has been divided into five broad categories viz., 1)Net sown area; 2)Forest; 3)Fallow land; 4)Cultivable waste and 5)Barren and uncultivable waste land for the period 1990-91 and 2000-01.

NET SOWN AREA: The net sown area is the land which is being actually decline. Out of the total geographical area of the basin had 317200 hectares. (54.25%) were under net sown during 1990-91. Whereas, during 2000-01, the basin had 321618 hectares. (55.01 %) were under net sown. About 4418 hectares. (0.76%) of land has been increased under net sown

during a span of ten years (Table 2). This increase is due to the cultivable waste land comes under agriculture. Accordingly, the land under net sown has also been increased during the span of ten years in the basin.

FOREST: In assessing the character of the vegetation type, a factor that cannot be neglected in the long occupation of man and the consequent change on the vegetal carpet through agriculture. The type of vegetation met with any given locality depends on the climate, soil and past treatment has been emphasized by the leading plant ecologists. The influence of temperature and rainfall on plant life has received a special attention in the classifications of climate proposed by Koppen and Thornthwait. The forest area is being actually decline. Out of the total geographical area of the basin had 151100 hectares. (25.84%) were under forest during 1990-91. Whereas, during 2000-2001, the basin has 143507 hectares. (24.54 %) of land under forest. Between 1990-91 and 2000-2001 about 7593 hectares. (0.3%) of land under forest has been decreased in the basin. There is a net decrease of 7593 hectares. (0.3%) of land under forest during the study period (Table 2). This decrease is due to the human interruption. There is almost small change in forest lands during a span of twenty years but the density of trees goes on decreased through time. Forest plays a dominant role in maintaining ecological and environmental balance in the district.

FALLOW LAND: The term fallow land applies for the lands which are not under crops at the time of reporting though they were soon in the immediate past. The fallow lands are generally divided into two major categories i.e. "Old fallow lands" which comprises those lands that have been left uncultivated for more than five years, and the "Current fallow lands

Table 2: Land use in Girna Basin (Past & Present -Area is in Hectares)

Sr.No.	Land use Category	Years		Changes
		1990-91	2000-01	
1	Net Sown Area	317200	321618	+4418
	Percentage	54.25	55.01	+0.76
2	Forest	151100	143507	-7593
	Percentage	25.84	25.54	-0.3
3	Fallow Land	29700	23891	-5809
	Percentage	5.08	4.09	-0.99
4	Cultivable Waste Land	38300	28316	-9984
	Percentage	6.55	4.84	-1.71
5	Land put to non-Agricultural uses	48400	67368	+18968
	Percentage	8.28	11.52	+3.24
	Total Area	5847000	584700	
	Percentage	100	100	

(Source: Nasik District: Socio-economic Abstract 1990-91 and 2000- 2001)

“which include lands that were not sown at the time of crop reporting but were sown one or two years before or left Fallow either in one season or for one complete year to replenish the soil fertility. The definition of the term “current fallow “greatly differs in many parts of the country. In Punjab, lands are classified as current fallow if it has been left uncultivated for less than two years. In Maharashtra, land continues to be classified as current fallow, if it is continued uncultivated for less than ten years. In Bihar current fallow is applied to all such lands which were not under crops at the site of reporting but which had been sown in the recent past. Thus current fallow are a part and parcel of the arable land. Girna basin has a fallow land of 29700 hect. (5.08 %) during 1990-91, which has been decreased to 5809 hect. during 2000-2001, to the total geographical area. The net decrease of fallow land is 5809 hect. Which constitute 0.99 percent over a period of ten years. This reclaimed land is almost used for cultivation purposes. Reclaiming fallow land is a good sign of prospering in the development agriculture in the district.

CULTIVABLE WASTE LAND: Cultivable waste lands are defiantly cultivable but are at present lying as waste on account of number of limitations. The limitations vary from one to another. They can be enumerated under the following heads: encroachment by wild weeds, floods and erosion, poor drainage, scarcity of water and distance from settlement area

etc. In Nasik district cultivable waste land is found in the areas where the land has been adversely affected by water logging, floods, erosion and scarcity of water. Due to these negative factors, this category of land has become un-economic and un-productive. This land can be brought under cultivation if they are provided with cultivable facilities. Also outlet can be provided to protect it from water logging. During 1990-91, the basin had 38300 hect. (6.55%), and during 2000-2001, 28316 hect. (4.84 %) of land were under cultivable waste to the total geographical area of the basin. About 1.71 % (9984 hect.) of land has been decreased in the basin during the span of ten years.

LANDPUT TO NON-AGRICULTURAL USE: This broad category comprises of a number of different types of land which are not available for cultivation under the existing circumstances. This type of use represents the land occupied by buildings, roads, railways, factories, water bodies, playgrounds, gardens, grave lands and settlements. This land covers an area of 48400 hect. (8.28%), and 67368 hect. (11.52%) during 1990-1991 and 2000-2001 in the basin respectively to the geographical area. There is an increase of land under this category. The net increase of land put to non agricultural use is 18968 hect. Which increased 3.24 percent over a period of ten years. This high proportion of non-agricultural land is due to rapid growth of population, which requires more land for residential, commercial

establishments, educational and other institutions, industries, roads, gardens, playgrounds etc. in the basin. The land under this category is increasing fast and is bound to increase in future too with the development of science and technology. This land is however, considered detrimental to balanced rural agrarian economy because the productive land is usurped by unproductive uses. Non-agricultural land is an index of the development of an area, when the area is developed in the construction of multi stored buildings and development in transport facilities.

CONCLUSION: The basin has good percentages of areas under net sown during the study period. It is above 50 percent of the total geographical area. The net increase of net sown area is 4418 hect. Increased only 0.76 % over a period of ten years. The net area under forest will be decreased between 1990-91 to 2000-01; it is 7593 hect. of the total geographical area

of the basin. The net decrease of forest area is 0.3 % between the study period. This percentage of land under forest will not suitable for environment & ecological balance. There is decrease in follow land i.e. 5809 hect. (0.99 %) over a period of ten years. There is net decrease of 9984 hect. (1.71 %) of land under cultivable waste. While the net increase of land put to non-agricultural use is 18968 hect. Constitutes 3.24 % over a period of ten years. The small increasing percentage of net sown area & increasing high proportion of land put to non-agricultural use is due to rapid growth of population, which requires more land for residential, commercial establishments, educational and other institutions, industries, roads, gardens, playgrounds etc. in the basin. Non-agricultural land is an index of the development of an area, when the area is developed in the construction of houses and transport facility.

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